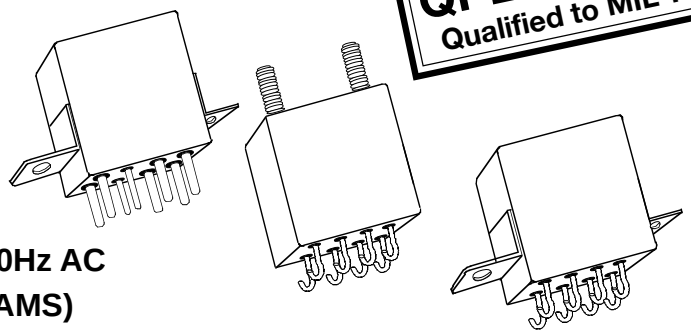
SERIES
**FCA-210**

# Tyco Electronics Mid-Range Military/Aerospace Relays

## 10 AMPERES, DPDT

**QPL APPROVED**
**Qualified to MIL-R-83536**

- **HERMETICALLY SEALED**
- **ALL WELDED CONSTRUCTION**
- **BALANCED FORCE**
- **PERMANENT MAGNET DRIVE**
- **CONTACTS: SILVER CADMIUM OXIDE WITH GOLD PLATING**
- **COILS FOR DC, 50 TO 400Hz AND 400Hz AC**
- **WEIGHT 1.6 OUNCES MAX. (45.4 GRAMS)**



The Series FCA-210 relay is a polarized single-side stable design, where the flux from a permanent magnet provides the armature holding force in the deactivated state, and its flux path is switched and combined with the coil flux in the operated state. This results in appreciably increased contact pressure in both states over that of a spring return nonpolar design. We also manufacture other versions of this relay:

**FCA-410:** 10 AMPERE 4PDT RELAY
**FCA-610:** 10 AMPERE 6 PDT RELAY

**AVAILABLE**

**FCA-215:** 15 AMPERE DPDT RELAY, HAS THE SAME SPECIFICATIONS AS THE FCA-210 EXCEPT IS RATED AT 15 AMPS.

### CONTACT RATING-AMPERES

Ratings Are Continuous Duty

| TYPE OF LOAD | LIFE (MIN.) CYCLES X $10^3$ | 28 VDC | 115VAC 400Hz | 115/200VAC 3Ø | |
|---|---|---|---|---|---|
| | | | | 400 Hz | 60Hz * |
| Resistive | 100 | 10 | 10 | 10 | 2.5 |
| Inductive | 20 | 8 | 8 | 8 | 2.5 |
| Motor | 100 | 4 | 4 | 4 | 2.0 |
| Lamp | 100 | 2 | 2 | 2 | 1 |
| | * 60 Hz LOADS RATED FOR 10,000 OPERATIONS | | | | |

**OVERLOAD CURRENT 40 AMPS DC, 60AMPS 400Hz**
**RUPTURE CURRENT 50 AMPS DC, 80 AMPS 400Hz**
**CONTACT MAKE BOUNCE 1 MILLISECOND AT NOMINAL VOLTAGE**
**MAX. CONTACT DROP AT 10 AMPS: INITIAL 0.100 VOLTS.**
**END OF LIFE 0.125 VOLTS**

# Tyco Electronics Mid-Range Military/Aerospace Relays

## 10 AMPERES, DPDT

### COIL DATA

| COIL CODE | NOMINAL VOLTAGES | FREQ. Hz | DC RES. AC AMPS (B) | OVER TEMPERATURE RANGE | | |
|---|---|---|---|---|---|---|
| | | | | PICKUP OR BELOW VOLTS | DROPOUT OR ABOVE VOLTS | MUST HOLD VOLTAGE (C) |
| 1 | 6 | DC | 20 Ω | 4.5 | 0.3 | 2.5 |
| 2 | 12 | DC | 80 Ω | 9.0 | 0.75 | 4.5 |
| 3 | 28 | DC | 320 Ω | 18.0 | 1.5 | 7.0 |
| 4 (A) | 28 | DC | 320 Ω | 18.0 | 1.5 | 7.0 |
| 5 | 48 | DC | 920 Ω | 32.0 | 2.5 | 14.0 |
| 6 | 28 | 400Hz | 180 mA | 22.0 | 1.25 | 10.0 |
| 7 | 28 | 50/400Hz | 100 mA | 22.0 | 1.25 | 10.0 |
| 8 | 115 | 400 Hz | 40 mA | 90.0 | 5.0 | 40.0 |
| 9 | 115 | 50/400Hz | 30 mA | 95.0 | 5.0 | 40.0 |

A. CODE 4 COILS HAVE BACK EMF SUPPRESSION TO 42 VOLTS MAX.

B. DC COIL RESISTANCE ± 10% AT 25˚C; AC COIL MAX. CURRENT AT NOMINAL VOLTAGE.

C. RELAY WILL STAY IN PICKED-UP STATE DOWN TO MUST HOLD VOLTAGES SHOWN.

D. MAX. OVERVOLTAGE: 6 & 12 VDC COILS 120% OF NOMINAL; ALL OTHERS 110% OF NOMINAL.

E. COILS AVAILABLE FOR OTHER VOLTAGES AND FOR AC 50/60HZ.

NOTE: Only DC Coil Models are QPL Approved.

### GENERAL SPECIFICATIONS

| | | |
|---|---|---|
| TEMPERATURE RATING: | | -70˚C TO + 125˚C |
| ALTITUDE: | | 300,000 FEET |
| SHOCK:* | Z, Y, & X ENCLOSURES | 200 g FOR 6 mS |
| | W & M ENCLOSURES (STUD MTG.) | 100 g FOR 6 mS |
| VIBRATION, SINUSOIDAL:* | Z, Y, & X ENCLOSURES | 30 g 33-3000Hz |
| | W & M ENCLOSURES (STUD MTG.) | 20 g 33-3000Hz |
| VIBRATION, RANDOM: * | Z, Y, & X ENCLOSURES | 0.4 $g^2$/Hz 50-2000Hz |
| | W & M ENCLOSURES (STUD MTG.) | 0.2 $g^2$/Hz 50-2000Hz |
| DIELECTRIC STRENGTH AT SEA LEVEL: | ALL CIRCUITS TO GROUND AND CIRCUIT TO CIRCUIT. | 1250 V rms |
| | COIL TO GROUND | 1000 V rms |
| DIELECTRIC STRENGTH AT 80,000 FEET: | | 350 V rms |
| INSULATION RESISTANCE: | INITIAL (500 VDC) | 100 MΩ MINIMUM |
| | AFTER LIFE OR ENVIRONMENTAL TESTS | 50 MΩ MINIMUM |
| OPERATE TIME AT NOMINAL VOLTAGE: | DC RELAYS | 10 ms OR LESS |
| | AC RELAYS | 15 ms OR LESS |
| RELEASE TIME AT NOMINAL VOLTAGE: | DC RELAYS | 10 ms OR LESS |
| | AC RELAYS | 50 ms OR LESS |

* Max. contact opening under vibration or shock 10 microseconds

SERIES
**FCA-210**

# Tyco Electronics Mid-Range Military/Aerospace Relays

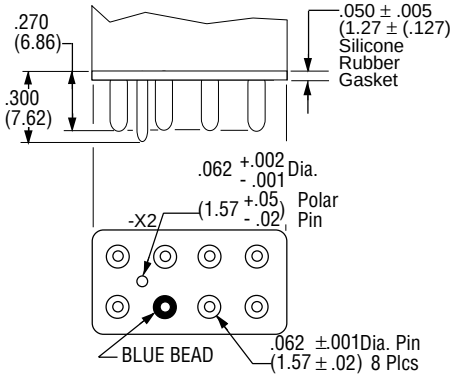
## 10 AMPERES, DPDT

Below are shown the standard terminal types and the enclosures available. Specify the assembly as indicated under How To Order. Dimensions are shown in inches ± .010 and (Millimeters ± .25).

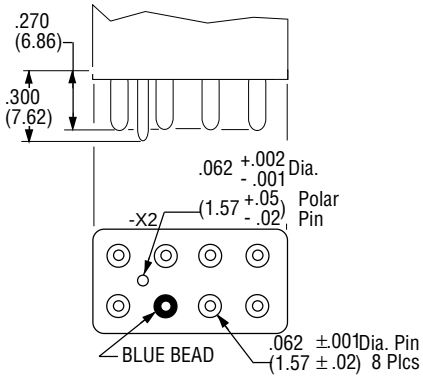
## TERMINALS

SOCKET PINS ARE GOLD PLATED
POLARIZING PINS ARE TIN/LEAD PLATED
CIRCUIT BOARD PINS ARE TIN/LEAD PLATED
DIMENSIONS EXCEPT AS NOTED:
INCHES ± .010 (MILLIMETERS ± .25)

### CODE "A" Socket Pins - All DC Coils

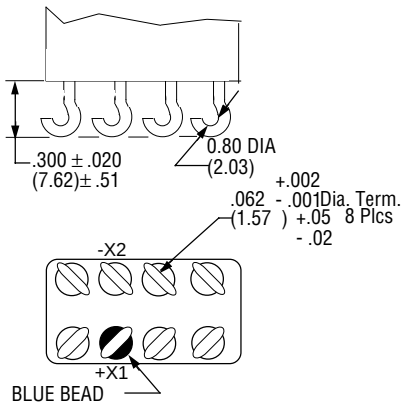



### CODE "B" Circuit Board Pins - All DC Coils

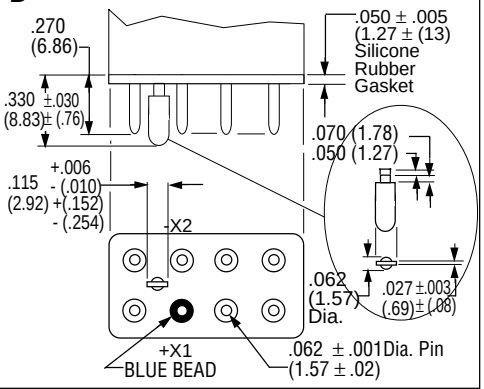



### CODE "C" Solder Hook Terminals

HOOK TERMINALS TIN/LEAD PLATED

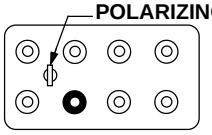



### CODE "D" Socket Pins 115 VAC

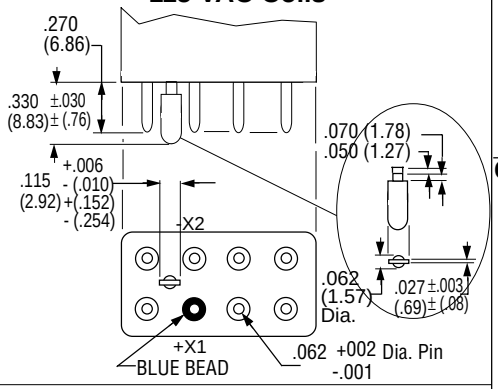



### CODE "E" Socket Pins 28 VAC Coils

Same as Code "D" Except polarizing Pin turned 90˚ to this plane.

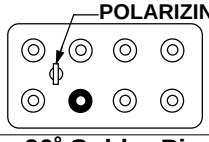



### CODE "F" Circuit Board Pins 115 VAC Coils



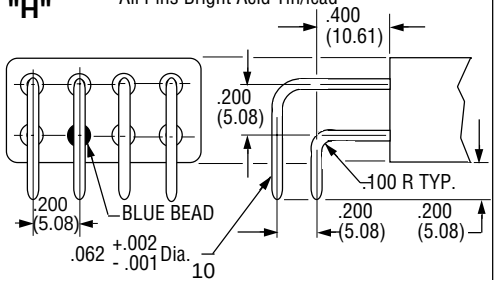

### CODE "F" Circuit Board Pins 28 VAC Coils

Same as Code "D" Except polarizing Pin turned 90˚ to this plane.




### CODE "H" 90˚ Solder Pins

All Pins Bright Acid Tin/lead



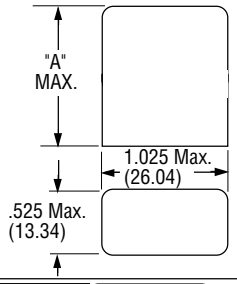

## ENCLOSURES

All Enclosures have Cupro-Nickel Cans bright acid tin/lead plated after assembly to terminal headers.

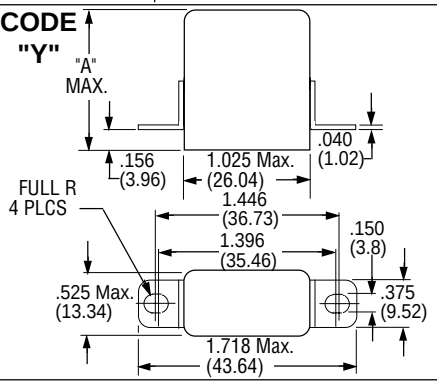
Dimensions: Inches ± .010 (mm ± .25)

**"A"** AC Coils 1.125 in. (28.57) Max.
DC Coils 1.010 in. (25.65) Max.

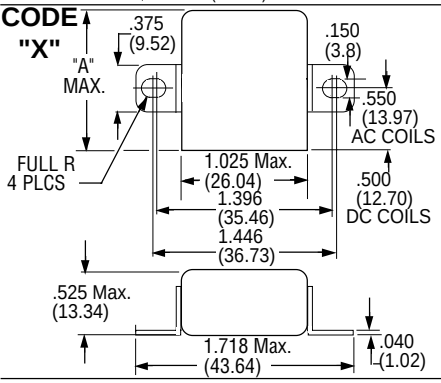
### CODE "Z"



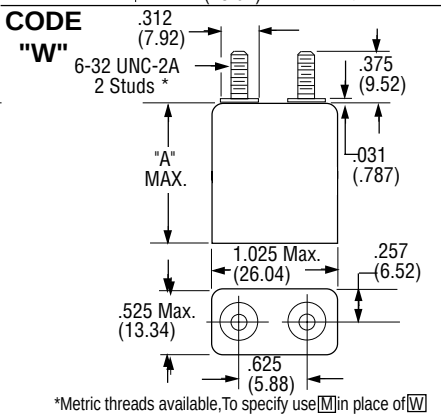

### CODE "Y"




### CODE "X"




### CODE "W"



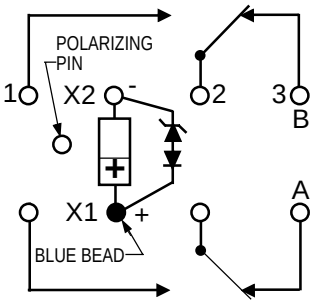

*Metric threads available, To specify use M in place of W

# Tyco Electronics Mid-Range Military/Aerospace Relays

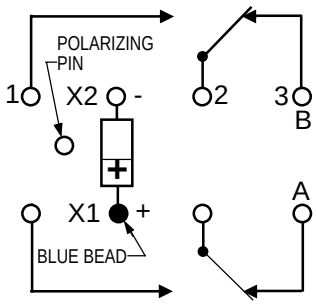
## 10 AMPERES, DPDT

### TERMINAL WIRING

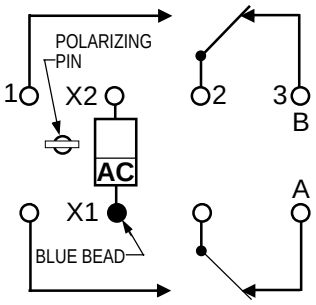
DC COILS WITH TRANSIENT SUPPRESSION



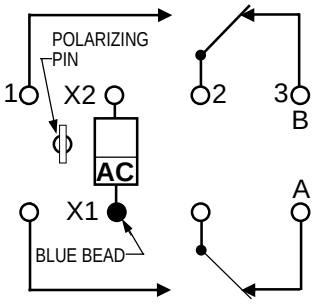

DC COILS




AC COILS 115 VAC




AC COILS 28 VAC

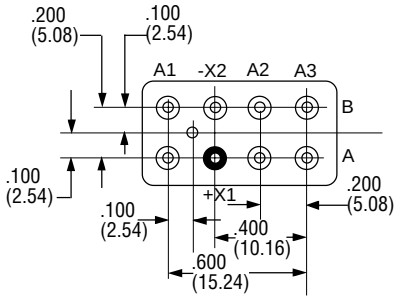



**NOTE:** Polarity must be observed with DC coil supply. Relay is polarized with a permanent magnet and will not operate or be damaged by reverse polarity.

Diodes used in transient suppression and in AC rectifier circuits have peak inverse voltage rating of 600 VDC minimum. Zener diodes have a minimum rating of 1 watt.

Terminal designations are for reference only and do not appear on the header.

### TERMINAL LAYOUT




## HOW TO ORDER

**(EXAMPLE)** — **FCA-215-**
**FCA-210-A Y 4**

**RELAY TYPE**

**TERMINALS** (Socket Pins, DC Coil)

**ENCLOSURE** (With Flanges)

**COIL** (28 VDC With Transient Suppression).

**NOTE: Only DC coil models are QPL Approved**